FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

9 to 15 February, 2014 (Week 07)

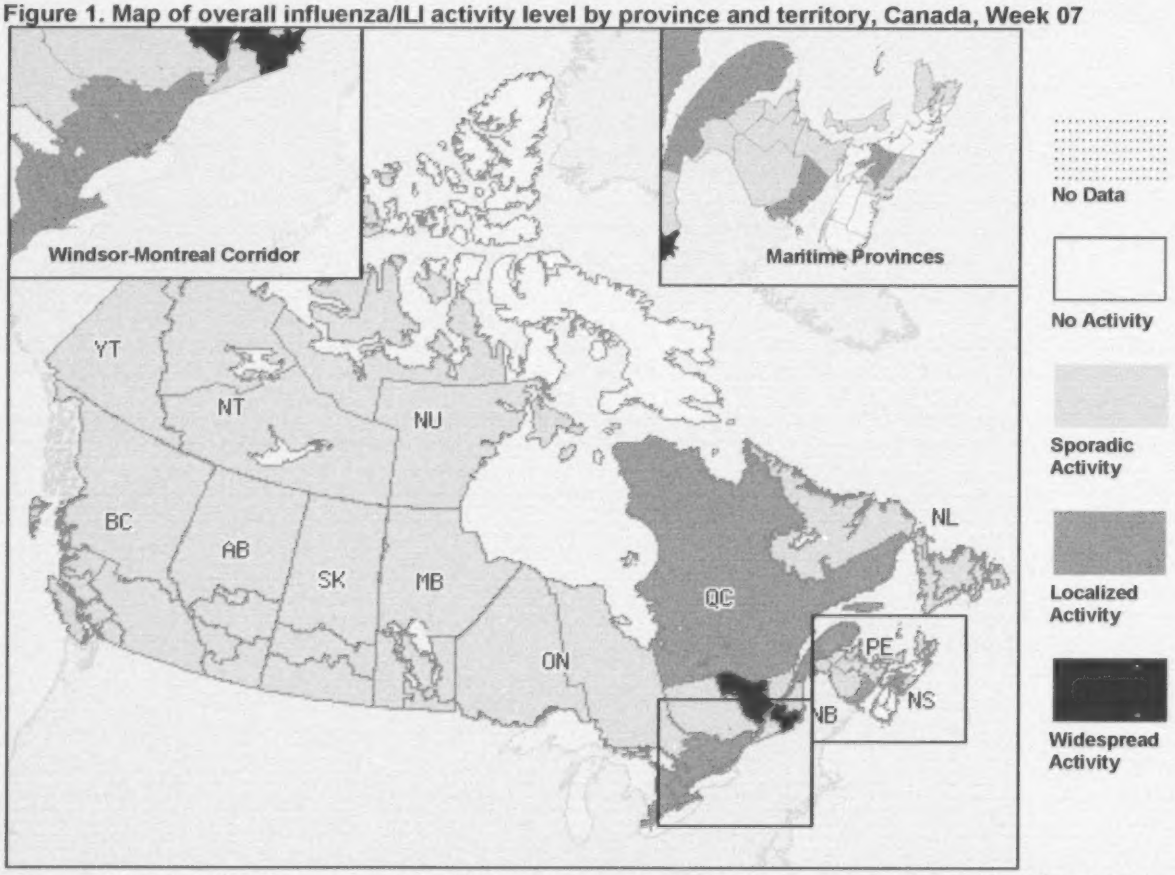
Overall Summary

- In week 07, overall influenza activity continued to decrease in Canada except in the eastern provinces which experienced a later start to the influenza season.
- The influenza A(H1N1) virus remains the most common influenza virus circulating this season although influenza B virus detections continue to increase.
- Adults 20-64 years of age continue to be more affected by influenza this season. However, the increasing circulation of influenza B may result in greater impact on older adults and children.
- To week 07, 2,951 hospitalizations have been reported, which is slightly lower compared to the same period last season. One hundred and fifty-five deaths have been reported, similar to the number reported for same period last season.
- Overall influenza activity in Canada during the 2013-14 season has been similar to the 2012-13 season and is within expected levels for this time of year.

Influenza/ILI Activity (geographic spread)

In week 07, one region in Quebec reported widespread activity, and nine regions in eastern Canada (ON(5), QC(2), NB(1) and NS(1)) reported localized activity (Figure 1). Influenza activity levels continue to decline, with fewer regions reporting widespread or localized activity.

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 07

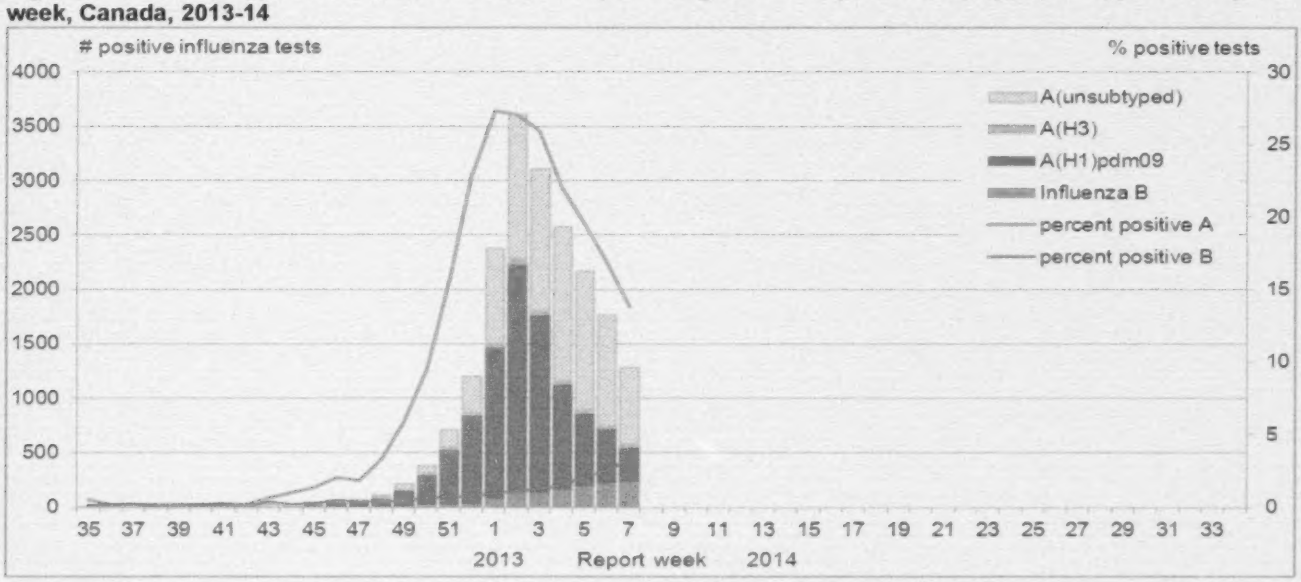


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the FluWatch website.

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests continued to decrease, from 1,764 in week 06 to 1,281 in week 07. The percentage of positive influenza tests decreased from 19.4% to 17.1% (Figure 2). Laboratory detections continue to follow a similar trend to the 2012-13 season, despite the difference in the predominant circulating virus. Cumulative influenza virus detections to date remain predominantly influenza A (93%), and among those subtyped, 97% (9,494/9,809) were A(H1N1)pdm09. However, the percentage of positive tests for influenza B has been rising slowly in recent weeks to 19.1% of influenza detections in week 07 (Table 1). A similar late-season wave of influenza B was observed during the 2012-13 and 2010-11 influenza seasons. Among the 16,141 cases for which information on age and type/subtype has been received this season, 56.6% were 20-64 years of age and 15.8% were ≥65 years of age (Table 2).

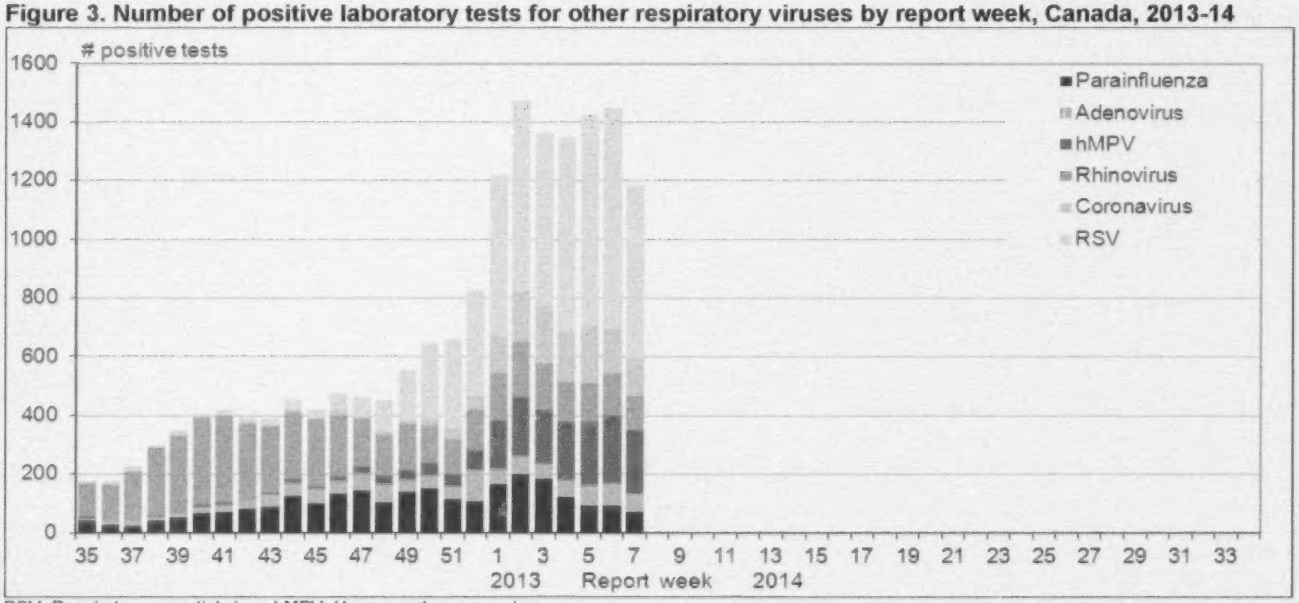
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The number of positive tests for RSV declined slightly in week 07. Although the number of positive tests for human metapneumovirus has been relatively stable in recent weeks, the percentage of positive tests has been increasing throughout January and February. The percentage of positive tests for other respiratory viruses has been stable or declining in recent weeks (Figure 3).

For more details, see the weekly Respiratory Virus Detections in Canada Report.

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces[1]	Weekly (February 9 to 15, 2014)					Cumulative (August 25, 2013 to February 15, 2014)				
	Influenza A				B	Influenza A				B
	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total	A Total	A(H1)pdm09	A(H3)	A(UnS)	B Total
BC	71	48	7	16	12	1609	1472	50	87	65
AB	94	47	1	46	10	3464	3214	38	212	82
SK	46	34	1	11	5	1300	939	4	357	21
MB	34	30	0	4	2	507	349	1	157	15
ON	204	74	10	120	56	5125	2280	214	2631	224
QC	496	66	0	430	151	4484	579	3	3902	860
NB	49	0	0	49	2	1347	364	1	982	8
NS	15	15	0	0	0	115	91	4	20	1
PE	0	0	0	0	0	102	102	0	0	0
NL	27	0	0	27	7	317	104	0	213	114
Canada	**1036**	**314**	**19**	**703**	**245**	**18370**	**9494**	**315**	**8561**	**1390**
Percentage[2]	80.9%	30.3%	1.8%	67.9%	19.1%	93.0%	51.7%	1.7%	46.6%	7.0%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[3], Canada, 2013-14

Age groups (years)	Weekly (February 9 to 15, 2014)					Cumulative (August 25, 2013 to February 15, 2014)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	#	%
<5	147	28	0	119	22	2806	1282	20	1504	150	2956	18.3%
5-19	49	12	0	37	36	1174	639	18	517	219	1393	8.6%
20-44	178	48	2	128	18	4581	2526	30	2025	243	4824	29.9%
45-64	169	40	0	129	40	3972	2160	37	1775	334	4306	26.7%
65+	99	29	4	66	46	2096	868	83	1145	448	2544	15.8%
Unknown	1	0	1	0	1	117	98	8	11	1	118	0.7%
Total	643	157	7	479	163	14746	7573	196	6977	1395	16141	100.0%
Percentage[2]	79.8%	24.4%	1.1%	74.5%	20.2%	91.4%	51.4%	1.3%	47.3%	8.6%		

[1] Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.
[2] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3] Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 984 influenza viruses [49 A(H3N2), 833 A(H1N1)pdm09 and 102 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Ten influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

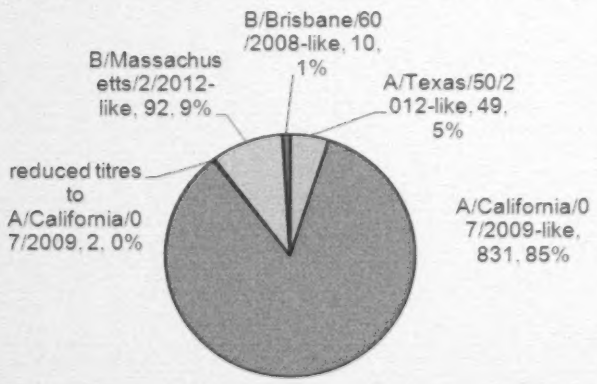

B/Brisbane/60 /2008-like, 10, 1%
B/Massachus etts/2/2012- like, 92, 9%
A/Texas/50/2 012-like, 49, 5%
reduced titres to A/California/0 7/2009, 2, 0%
A/California/0 7/2009-like, 831, 85%

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 984

The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/California/7/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 660 influenza viruses for resistance to oseltamivir and for resistance to zanamivir, and all were sensitive. All 766 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

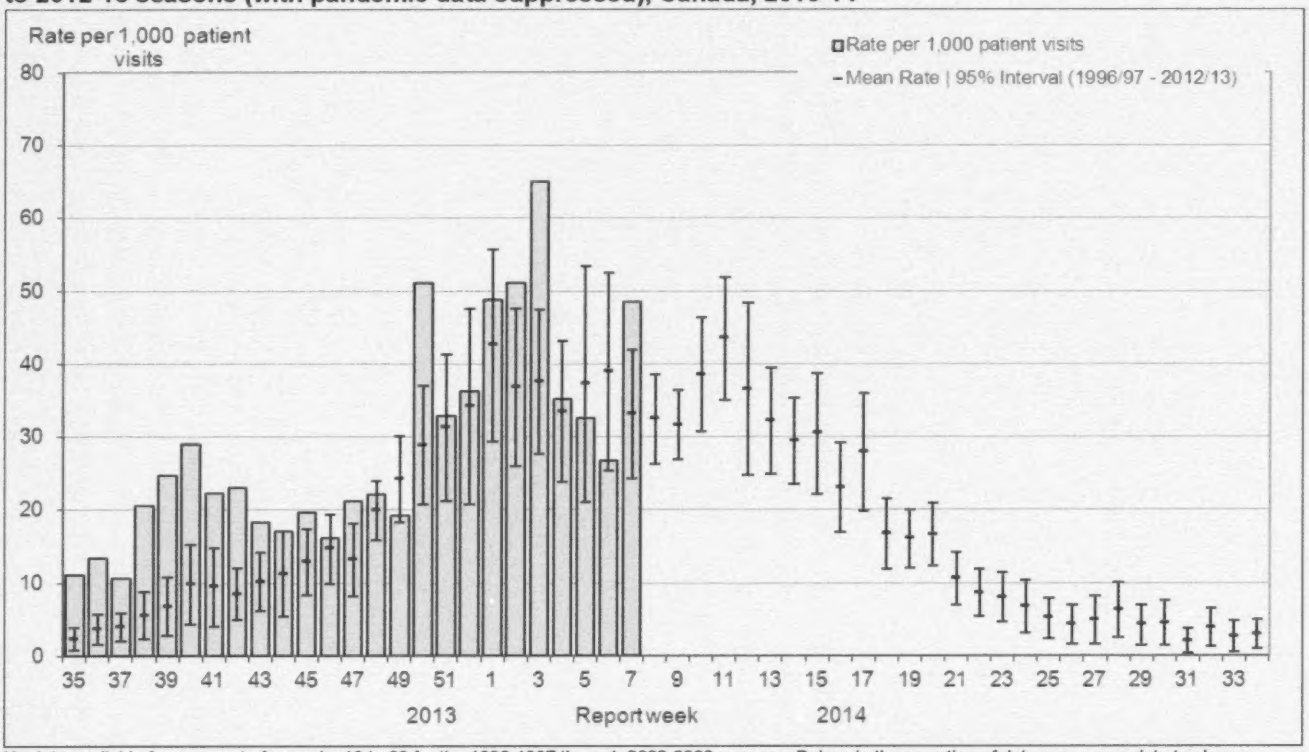
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	45	0	45	0	62	62 (100%)
A (H1N1)	551	0	551	0	704	704 (100%)
B	64	0	64	0	NA[1]	NA[1]
TOTAL	660	0	660	0	766	766 (100%)

[1] NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate increased from 26.7/1,000 in week 06 to 48.6/1,000 in week 07; which is above the expected range for week 07 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

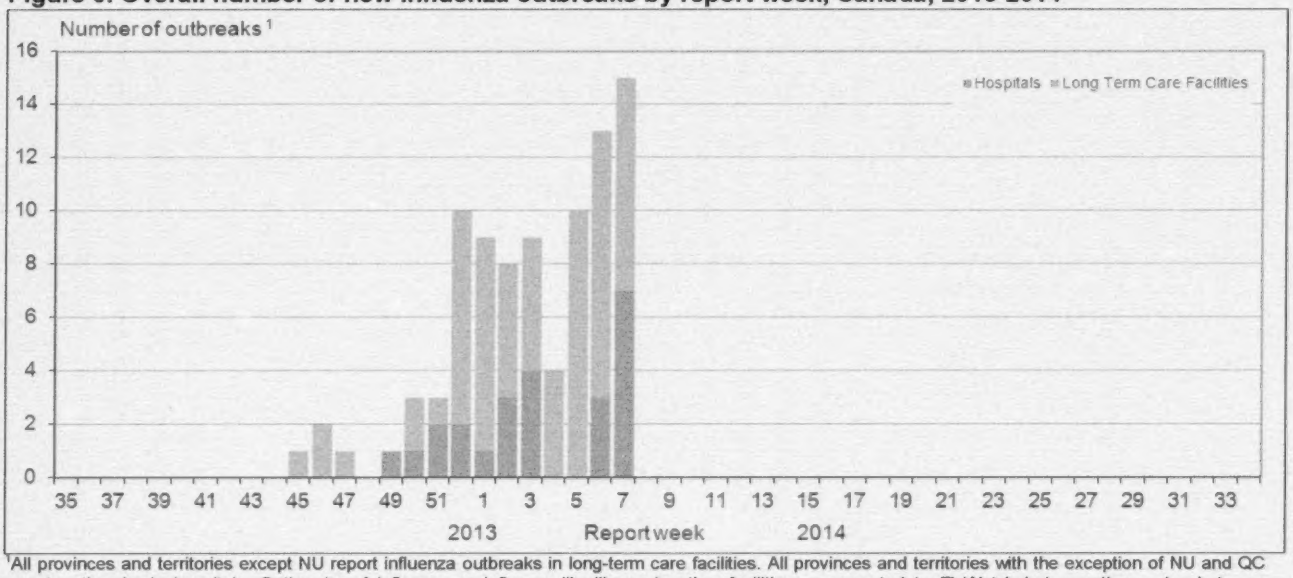


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 07, 15 new influenza outbreaks were reported: seven in hospitals and eight in long-term care facilities (Figure 6). In addition, two outbreaks of influenza-like-illness were reported: one in a school and one in another facility or community.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

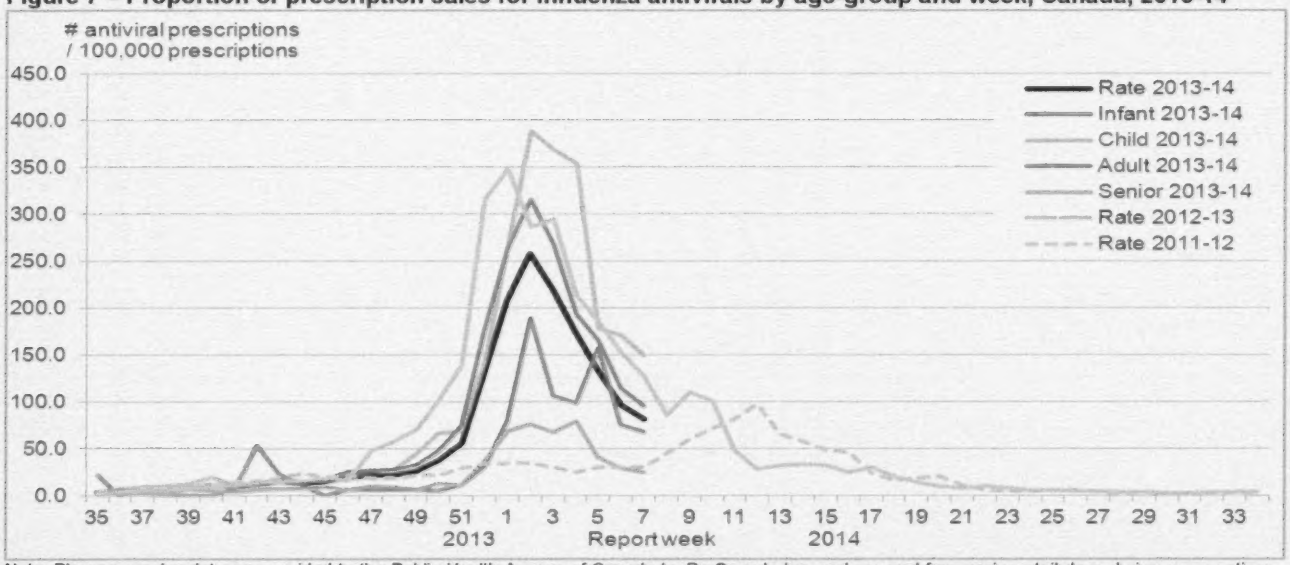


[1]All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

In week 07, the proportion of prescriptions for influenza antivirals continued to decrease for all age groups, following the downward trend in laboratory detections of influenza. The largest proportion of prescriptions for antivirals continued to be among children 2-18 years of age followed by adults 19-64 years of age (Figure 7). Within these age-groups, higher proportions of prescriptions for antivirals were observed among children >5 years of age and adults <45 years of age.

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 07, 38 new laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 33 in week 06. In week 07, influenza A was reported in 32 cases and influenza B in 6 cases (Figure 8a). Twenty-five (66%) of the cases were <5 years of age. Four ICU admissions were reported in week 07, three children 2-4 years of age, and one 5-9 years of age. No deaths were reported.

To date this season, a total of 485 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 94% of which have been influenza A, and almost all of those subtyped (98%) were A(H1N1)pdm09. Children under 5 years of age represent 76.9% of cases to date (Table 4). Seventy-five ICU admissions have been reported, of which 32 (43%) were children under 2 years of age (Figure 9a). Among the 71 ICU admission for which the influenza type reported, all but three were cases with influenza A, and 96% of those subtyped were A(H1N1)pdm09. Among the 60 ICU cases with available data, 41 (68%) were reported to have underlying medical conditions. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 07, 30 new laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 48 in week 06. There has been a steady decline in the number of new cases over recent weeks. Among cases in week 07, 25 (83.3%) were influenza A, of which three were A(H1N1)pdm09, one was A(H3N2) and 21 were A(unsubtyped). Four cases with influenza B and one case without information on the influenza type were reported (Figure 8b). The majority of hospitalizations occurred among adults ≥45 years of age (26; 87%). Two ICU admissions were reported in week 07, both 20-44 years of age with influenza A. No deaths were reported in week 07.

To date this season, 959 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 918 (95.7%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). ICU admission was required for 167 hospitalizations, all but five of which were cases with influenza A. More than three quarters of hospitalizations and approximately 80% of ICU admissions were ≥45 years of age. Of the 144 ICU admissions with available information, 124 (86.1%) were reported to have at least one comorbidity and 104 (72.2%) reported not having been vaccinated this season. Forty-seven deaths have been reported, all but one with influenza A (28 A(H1N1)pdm09, one A(H3N2) and 17 A(unsubtyped)); five cases 20-44 years of age, 24 cases 45-64 years of age and 18 cases ≥65 years of age (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

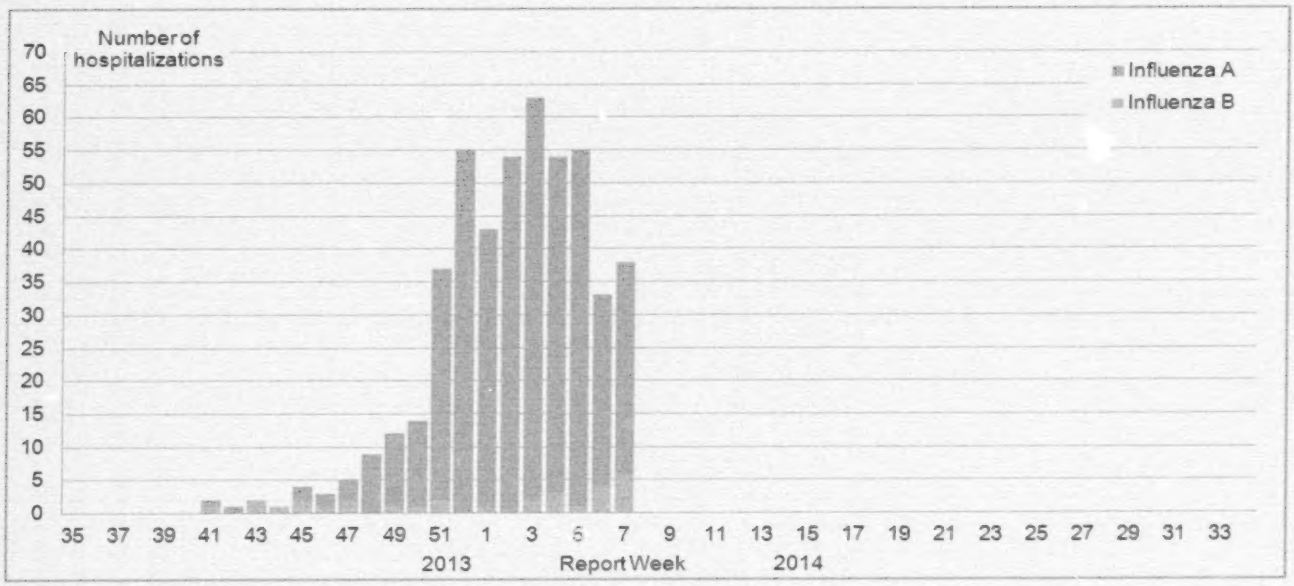
Age groups	Cumulative (25 Aug. 2013 to 15 Feb. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	87	24	0	63	2	89 (18%)
6-23m	131	38	1	92	5	136 (28%)
2-4y	139	46	2	91	9	148 (31%)
5-9y	69	20	0	49	11	80 (16%)
10-16y	29	13	0	16	3	32 (7%)
Total	455	141	3	311	30	485
% [1]	93.8%	31.0%	0.7%	68.4%	6.2%	100.0%

Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

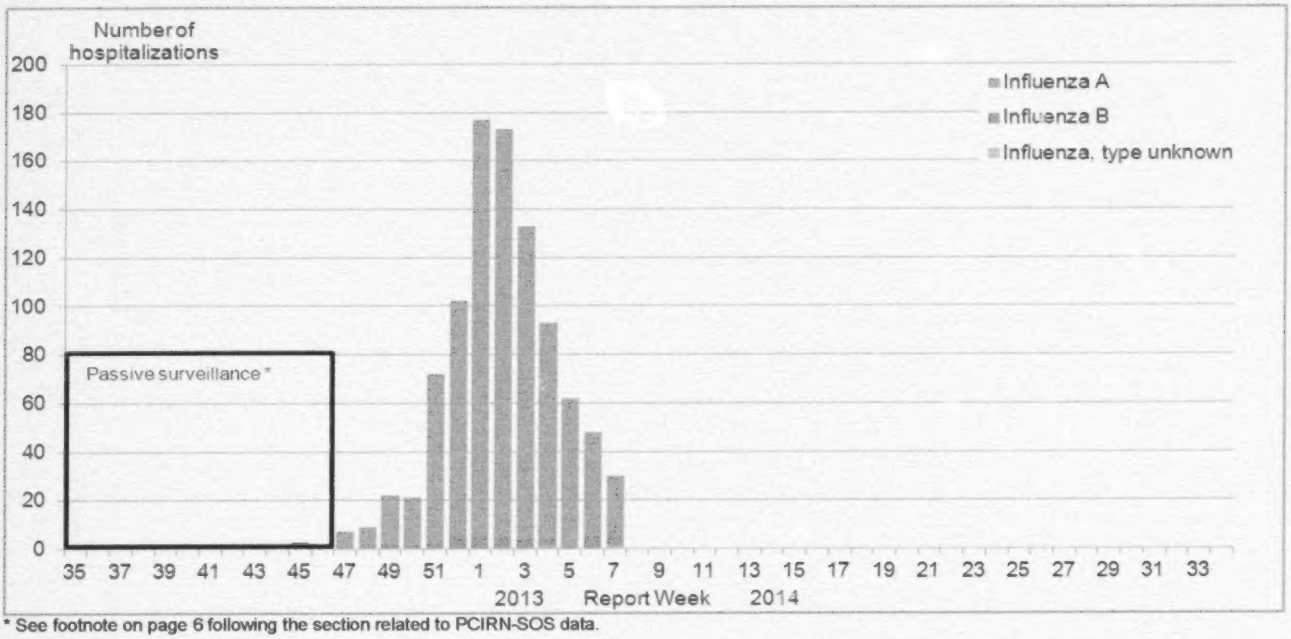
Age groups (years)	Cumulative (25 Aug. 2013 to 15 Feb. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	9	3	0	6	1	10 (1%)
20-44	205	111	3	91	2	207 (22%)
45-64	367	165	3	199	7	374 (39%)
65+	333	171	17	145	29	362 (38%)
Total	914	450	23	441	39	953
% [1]	96%	49%	3%	48%	4%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * Two cases for which the influenza type has not yet been reported, and four cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14
A) Paediatric hospitalizations (≤16 years of age, IMPACT)



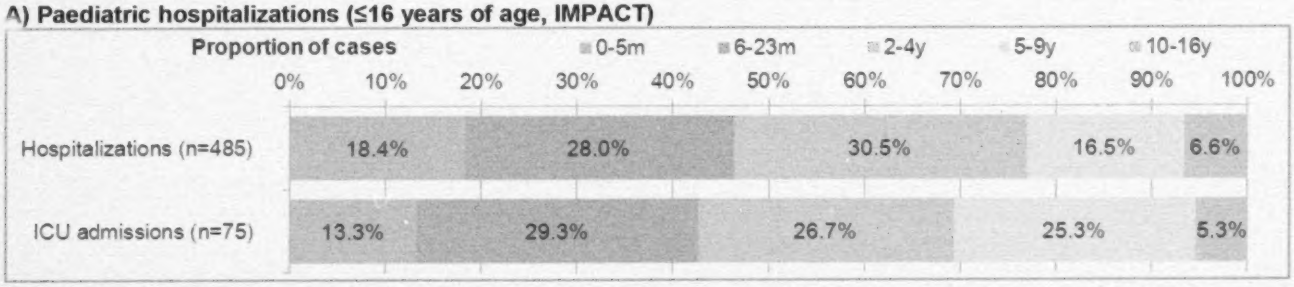
B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



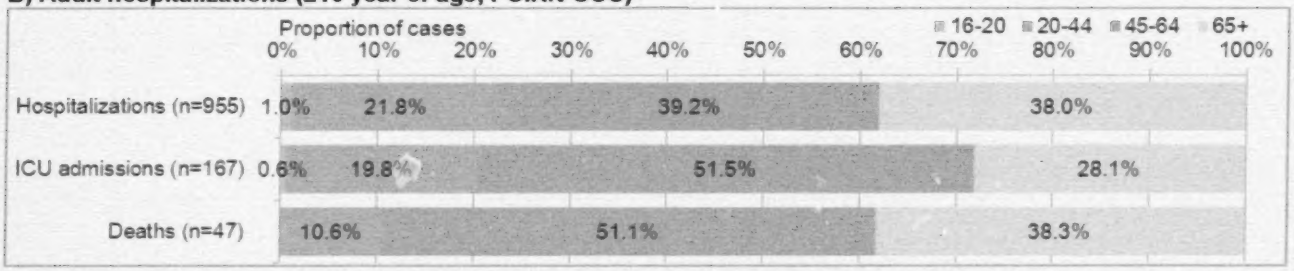
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 07, 109 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* The majority were cases of influenza A (100, 91.7%), of which 46 were A(H1N1)pdm09, one was A(H3N2), and 53 were A(unsubtyped). Among the eight ICU admissions reported in week 07, the six cases with age reported were adults 20-64 years of age. Nine deaths were reported, over 75% of which were adults ≥45 years of age. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 2,951 influenza-associated hospitalizations have been reported, 97.2% with influenza A. The majority (57.3%) of hospitalizations have been cases 45 years of age of older (Table 6). A total of 291 ICU admissions have been reported this season, of which 69.8% were among adults 20-64 years of age. A total of 155 deaths have been reported. The highest proportion of deaths has been among adults 20-64 years of age (55.5%), followed by adults ≥65 years of age (36.7%). Influenza B has been detected infrequently among severe cases of influenza to date this season: in only 2.8% of hospitalizations, 1.0% of ICU admissions, and 1.9% of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 15 Feb. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	497	253	6	238	19	516 (18%)
5-14	107	57	5	45	10	117 (4%)
15-19	28	17	2	9	1	29 (1%)
20-44	506	368	3	135	5	511 (18%)
45-64	921	607	16	298	13	934 (33%)
65+	722	392	45	285	34	756 (26%)
Total	2781	1694	77	1010	82	2863
Percentage[1]	97.1%	60.9%	2.8%	36.3%	2.9%	100%

[1] Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
* Eighty-eight cases for which age information is not available have not been included in Table 6.

See additional data on Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14 on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Seventeen new cases of human infection with influenza A(H7N9), and one death, have been reported by the World Health Organization since the last FluWatch report. Globally to February 20, 2014, the WHO has been informed of a total of 360 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 67 deaths.

PHAC – Avian influenza A(H7N9)
WHO – Avian Influenza A(H7N9)

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

No new laboratory-confirmed cases of MERS-CoV have been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 182 laboratory-confirmed cases of infection with MERS-CoV, including 79 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)
WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html.

Ce rapport est disponible dans les deux langues officielles.